LETTERS TO THE EDITOR.

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Dr. H. J. Hansen and the Copenhagen Museum of Zoology.

On behalf of the zoologists who have signed the accompanying letter to Dr. H. J. Hansen, of Copenhagen, I have been asked to send a copy to you with the request that you will be good enough to publish it in Nature.

W. T. Calman.

1 Mount Park Crescent, Ealing, W., March 7.

March, 1910.

To Dr. H. J. Hansen,
The University Museum of Zoology,
Copenhagen.

Dear Dr. Hansen,

We, being some of those among the zoologists of Great Britain who know and value your zoological work, have heard with regret that there is a chance of your leaving the Museum of Zoology in Copenhagen. We hope that this is not the case; and we more especially hope and trust that you will let no circumstances turn you aside from your important zoological investigations.

The Museum of Steenstrup, of Lütken, and of Schiödte is honoured by us all; we know and honour many of the fellow-workers and successors of those great naturalists; and we consider that among so many distinguished names your own is by no means the least distinguished.

To the researches that you have carried on for many years, partly by yourself, partly together with your learned compatriot, Sörensen, we owe the best part of our knowledge of several important orders and families of Arthropods; you figure in our text-books as the leading authority on such difficult groups as the Palpigradi, the Pauropoda, the Cryptostemmatidæ, the Hemimeridæ, and the Choniostomatidæ; and this partial list of your works is in itself a proof that you have always laboured just where there were real gaps and imperfections in the common stock of zoological knowledge.

Your Monograph on the Choniostomatidæ we would refer to in particular as a masterpiece of delicate dissection and exquisite illustration; while in one and all of your publications we recognise the keenest morphological insight, and an uncommon grasp of the essential principles of classification.

With our best wishes for your prosperity, we beg you to receive from us this tribute to your powers and this testimony of our personal regard.

Very faithfully yours,

(*Signed*) A. Alcock, E. J. Allen, Ernest E. Austen, F. A. Bather, G. A. Boulenger, Gilbert C. Bourne, W. T. Calman, G. H. Carpenter, Wm. Eagle Clarke, C. Clifford Dobell, J. Cossar Ewart, F. W. Gamble, J. Stanley Gardiner, W. A. Herdman, Sydney J. Hickson, E. W. L. Holt, E. Ray Lankester, E. W. MacBride, W. C. McIntosh, P. Chalmers Mitchell, A. M. Norman, R. I. Pocock, Edward B. Poulton, R. F. Scharff, Adam Sedgwick, A. E. Shipley, Thomas R. R. Stebbing, J. Arthur Thomson, D'Arcy W. Thompson, Chas. O. Waterhouse.

Colour Blindness.

When reading the late case of Mr. John Trattles and his colour-blindness, and when considering the discussion on the value of the tests for colour-blindness in its practical bearing for seamen and engine-drivers, it occurred to me that there was a very simple means of enabling red-blind and green-blind persons to distinguish red lights from green lights, and both of these from white lights, without their having to recognise the colours at all. I tested a colour-blind person here first with red glass and next with green glass placed in front of a cycle lamp, and he could not distinguish between the red and the green; but with the aid of my device he could distinguish the red light from the green light without fail, though he could not see them as distinct colours. The means of effecting this is quite simple. I gave him suitable pieces of red and of green glass. I told him to look at the white light first through the red glass and then through the green glass; result, he could see the white light through either glass, though he could not distinguish the colours, but when he could see the light clearly through each separately of his pieces of glass he knew the light was not green or red, but white.

I then made the lamp shine through a piece of red glass, and told the man I was testing to look at it first through his bit of red glass and then through his bit of green glass; result, he could see the light of the lamp through his bit of red glass, but could see no light through his bit of green glass, and so he knew the light of the lamp must be red, though he did not know its colour. Next I made the light shine through a piece of green glass, and when my man looked at it through his green glass he could see the light clearly, but when he looked at it through his piece of red glass he could not see it at all, or only very, very dimly, if the green glass of the lamp was a pale green and let some white through with the green, but in either case he could say with certainty the light was green and not red or white, and this without recognising the colours as colours.

The practical application of the above facts is simple, and can be effected in a variety of manners and inexpensively. For example, a sort of double eye-glass could be made holding a suitable piece of red and of green glass and with a small handle, and made of a size easily to fit in the pocket, or, for use at sea, it might take the form of a simple night-glass with a small slider carrying the coloured glasses at the eye-piece end. Anyone can try experiments in this matter with the aid of a bicycle lamp and its green and red light on either side, and suitable pieces of red and green glass to look through.

Summary.—When the lamplight can be seen clearly through both the red glass and the green glass separately: conclusion, the light is white.

When the lamplight is seen through the red glass and not through the green glass: conclusion, the light is red.

When the lamplight is seen clearly through the green and not through the red, or only very, very dimly: conclusion, the light is green.

It is not a case of distinguishing by colour recognised, but by whether the light can or cannot be seen in each case.

I offer this suggestion in case it may be of any service, and unpatented, for the free use of all who like to use it.

Stonyhurst. H. M.

The Meaning of Ionisation.

The columns of Nature are doubtless not the proper place in which to conduct correspondence classes in elementary science, but when Prof. Armstrong asks a simple question surely mere courtesy demands that he should receive a straightforward answer, such as Prof. Walker and "A. S." have not given him.

I imagine that nobody will quarrel with the following definitions:—

Ions are particles supposed to be present in some media such that, when the medium is placed in an electric field, the particles have a finite average velocity relative to the medium along the direction of the field.

"Ionisation" is used in two senses:—(1) it is used to denote the number of ions present in unit volume of the medium; (2) it is used to denote the process by which the ions are produced. Since several such processes are known, the use of the word ionisation does not connote any special hypothesis as to the mechanism by which the ions are produced. N. R. C.

A Rare Crustacean.

Yesterday my assistant, Mr. G. Pyman, found several *Cheirocephalus diaphanus* swimming in a flooded ditch on Eton Wick Common. The sunlight shining on the beautiful green bodies of the males made a very striking effect. We were able to catch about twenty specimens of both sexes. I had never seen this phyllopod alive before, and, so far as I know, it has never been recorded previously from this district. The females, of brownish-purple colour, all have

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full egg-cases attached to their abdomens. I put several individuals into different aquaria, and was much annoyed to find that they fell victims to various enemies during the night. A Dytiscus beetle, the presence of which had been forgotten, accounted for four, and four more were apparently devoured by insignificant fresh-water snails. Those, however, that were placed in a tank by themselves are alive and well, and feed on the green algæ supplied to them. The males are about $1\frac{1}{2}$ inches long, the females rather smaller.

When the river comes down in flood experience shows that it is time to be on the look-out for zoological curiosities. Perhaps Apus itself may reappear once more now that Cheirocephalus has shown the way!

Eton, March 5. M. D. HILL.

The Formation of Large Drops of Liquid.

THE following experiment, based on the temperature-density relations between aniline and water, serves to illustrate to an audience the various shapes through which a drop passes in the course of its formation. A glass beaker, about 9 inches in height and $4\frac{1}{2}$ inches diameter, is filled to about 7 inches with distilled water, and about 80 c.c. of aniline are added. The beaker is then placed on a burner, and the temperature raised until the aniline floats to the surface of the water. On spreading out at the surface the aniline is cooled, thereby becoming denser than the water beneath. A large drop, 1 inch or more in diameter, then detaches itself from the mass at the surface, the formation being so slow that the altering shapes of the drop, the drawing out of the neck of liquid, and the thinning of the neck in two places may easily be observed. The large, detached drop falls to the bottom of the beaker, and is there re-heated, thereby again becoming lighter than the water, and rising to the surface, when a second drop is formed. By maintaining the temperature about 80° the formation of drops continues indefinitely in the manner described. The slightly pink colour assumed by the aniline enables the experiment to be seen clearly from a considerable distance, and the many beautiful shapes assumed by the drops lend an added interest to this simple method of demonstrating their formation. CHAS. R. DARLING.

City and Guilds Technical College, Finsbury.

The Fertilising Influence of Sunlight.

THE letters of Mr. and Mrs. Howard and of Dr. E. J. Russell in recent issues of NATURE point to the conclusion that the partial sterilisation of the soil improves its fertility. In connection with this subject, I would like to record that the effect of heating the soil has been observed here for some years. It has been the practice to collect all the refuse of the place that cannot be rotted, such as hedge cuttings, tree prunings, &c. These are placed on a vacant space in the kitchen garden and a fire made of them in winter. The fire is generally a large one, burning fiercely all day, and the larger branches keeping it going all night.

In the following summer the site of the fire is well marked. The rows of vegetables where they pass over it are more than a half stronger than at other parts, though they do not keep that proportion to the end of the season. The increased growth seems to be due to the heating of the soil, and not to the large amount of wood ashes left by the fire, as these are either lifted and used as a top dressing for borders where the spade cannot be used, or are spread over the vegetable ground, the site of the fire being generally left quite bare of ashes.

Ardenlea, Falkirk, March 8. JOHN AITKEN.

MOLES AND MOLEHILLS.

LIKE that of other common animals, the complete life-story of the mole has yet to be written, exceedingly little being really known. The difficulties of observing the habits of a subterranean dweller of a most retiring disposition are patent but not altogether insuperable, and the wonder is that field naturalists have been content to read and take for granted the information handed down for the last century without any attempt to confirm it.

During the winter months one cannot help noticing in the open fields here and there a mole-heap conspicuously larger than the rest. This is a male mole's winter habitation, but at present we do not know whether he lives alone or with his wife, or if the female ever constructs these "fortresses," as they are called. Probably he lives alone, and probably females make "fortresses" slightly more simple in construction and smaller in size than those of the males. If we take a spade and carefully slice away the top of a fortress, we shall find several hollow tunnels or runs, which may be opened up and followed to the base of the "fortress," whence they lead away into the field. Slicing further under these into the "fortress," and just below the ground-level, we come upon a large circular cavity filled with a bundle of grass or dead leaves; this is the mole's nest in which he sleeps. If he has lately quitted it the interior will be quite warm to the hand; the mole himself, however, will never be caught in the nest. When the nest is removed and the cavity examined, it will be found about a foot in diameter and worn smooth by the mole wriggling about as he wraps his nest round him, for that is his method of arranging himself within it. Two or more tunnels will be found leading away from the nest-cavity into the field. One of these is particularly noteworthy, as it is found in nearly every fortress; this exit leads from the bottom of the nest perpendicularly downward for about a foot, then, turning upwards, it joins another run. Its origin and use are uncertain, but it is usually regarded as a sort of sally port, and is known as the "bolt-run."

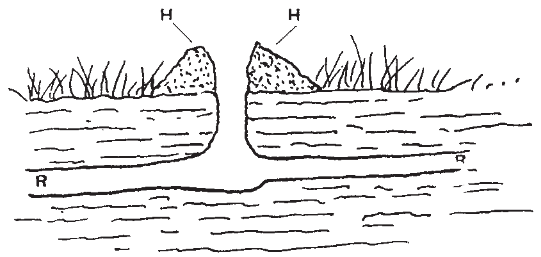

FIG. 1.—First stage of the fortress—sectional view. R R, Mole's run below the surface; H H, heap of ejected earth.

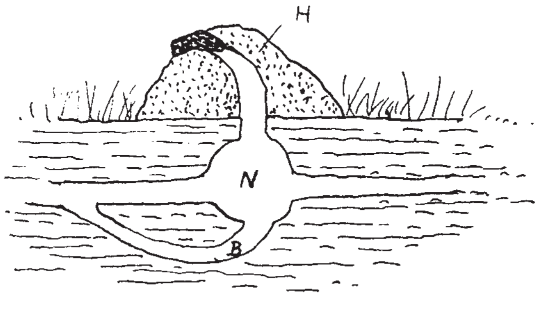

FIG. 2.—Second stage of the fortress—sectional view. N, Nest-cavity; B, bolt-run; H, heap of ejected earth.

It is extremely unlikely that the mole deliberately selects the site of his fortress, as he is practically blind; probably he sets to work whenever the impulse seizes him, and proceeds in the following manner. He commences to enlarge a nest-cavity, ejecting the earth which he has loosened with his powerful claws out of a hole in the roof; this he does with the top of his head in little jerks. The quiet observer may see a sausage-shaped mass of earth issue from below

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